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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,226	10/17/2001	Scott MacKay	594-25572-US	5588

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EXAMINER
TAYLOR, VICTOR J

ART UNIT	PAPER NUMBER
2862	

DATE MAILED: 03/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/981,226	MACKAY, SCOTT	
	Examiner	Art Unit	
	Victor Taylor	2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Office Action* .

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention as specified in the claims.

Therefore, the claimed data processing steps in the claims must be shown in a new block and level drawing, or processing flow chart, or similar drawing or the feature(s) canceled from the claim(s).

The support for the new drawing must be shown in the specification in the brief description of the drawing, and in the description of the drawing. The support must include details for the processing steps or drawing elements for the new drawing in the specification.

No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Information Disclosure Statement

2. The listing of references in the specification in the instant application on page 9 and page 10 in reference to the publications by The Geophysics Society of Exploratory Geophysics is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the

Office, and MPEP § 609 A (1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the examiner on form PTO-892 has cited the references, they have not been considered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Chambers in U. S. 4992993.

With regard to claim 1, Chambers discloses the limitation of determining an observed velocity 26 in figure 3 by measurement and X^ - T^ analysis in lines 14-16 of column 5.

Chambers further discloses the limitation of determining a vertical travel time X using the equation in figure 3 and discloses the two way travel time in line 26 and the two layers of water in lines 15-30 of column 5.

Chambers further discloses the limitation of applying the vertical time correction to seismic data figure 9, and in the geometrical construction in line 29 of column 5 and calculates the first move out in terms of the RMS velocity in lines 35-55 of column 7.

As to claim 2, Chambers further discloses the limitation of velocity and time equation in figure 3 and discloses velocity technique in line 35 of column 4.

As to claim 3, Chambers further discloses the limitation of determining velocity 25 and 27 from a seismic gather 18 in figure 3 in combination with the seismic events in line 61 of column 2.

As to claim 4, Chambers further discloses the limitation of the time dependent and offset dependent correction to correct travel times in lines 33-41 of column 4 using the equations in combination with lines 10-31 in column 5.

As to claim 5, Chambers further discloses the limitation of the selected velocity V^ in figure 3 in combination with the X^ - T^ analysis in line 15 of column 5.

With regard to claim 6, Chambers discloses the limitation of determining the offset correction delta T in the equation in figure 3 (Tx^ - To^), and discloses the water bottom time and travel time in lines 17-35 of column 4 and the observed velocity 26 in figure 3 by measurement and X^ - T^ analysis in lines 14-16 of column 5.

Chambers further discloses the limitation of selecting an ideal water velocity by applying the time differential to the raw travel times to obtain the correct travel times in line 40 and discloses the velocity in lines 45-55 of column 4

Chambers further discloses the limitation of zero-offset water bottom data in line 23 of column 4.

Chambers further discloses the limitation of determining an observed velocity at station A and station B by multiplying the reciprocal of the water velocity in line 35, to determine the corrected travel times and determines the correct water velocity in line 43 of column 4. Chambers further discloses the limitation of applying the vertical time correction to seismic data figure 9, and in the geometrical construction in line 29 of

column 5 and calculates the first move out in terms of the RMS velocity in lines 35-55 of column 7.

As to claim 7, Chambers further discloses the limitation of time dependent correction in the vertical travel time in line 19 and the offset correction in the offset data in line 24 of column 4 in combination with the RMS velocity in lines 10-30 of column 5.

As to claim 8, Chambers further discloses the limitation of water velocity dynamic correction using the equation in figure 3 and discloses the geometrical construction "by using the equations commonly found in the standard text on geophysics", in lines 15-30 of column 5.

As to claim 9, Chambers further discloses the limitation of source S and receiver R1-R4 with offset 25-27 in figure 3, and discloses the first and the second computer models using the equation in figure 3 in terms of the offset between the source and receivers in lines 12-20 of column 3.

As to claim 10, Chambers further discloses the limitation of one or more receiver points in line 66 of column 2, and discloses receiver R0 with zero offset in line 20 of column 5, and further discloses the angled ray paths to receivers R1 and R4 in figure 3, and further discloses the angle slanted dashed lines 25 and 25' in figure 3 and in line 22 of column 5.

As to claim 11, Chambers further discloses the limitation of using the first model with normal move out velocities in line 1 and determines the angle using the derived velocities in line 3 of column 3.

As to claim 12, Chambers further discloses the limitation of normal move out velocities based upon the water velocities in line 66 and uses the hyperbolic move out correction line 64 in column 6 and in figure 9.

As to claim 13, Chambers further discloses the limitation of deriving the ray paths in the model using the equations in figure 3 and discloses the ray paths 25-27 between the surface 10 and the bottom 13 with the thermocline 26 in figure 3.

As to claim 14, Chambers further discloses the limitation of deriving the water velocity dynamic correction using the equation in figure 3 and using the models in lines 1-20 of column 3.

As to claim 15, Chambers further discloses the limitation of determining the velocity from the seismic data gather in line 62 in combination with the receiver points in lines 60-67 of column 2.

With regard to claim 16, Chambers discloses the limitation of determining the offset correction delta T in the equation in figure 3 (Tx^ - To^), and discloses the water bottom time and travel time in lines 17-35 of column 4 and the observed velocity 26 in figure 3 by measurement and X^ - T^ analysis in lines 14-16 of column 5.

Chambers further discloses the limitation of selecting an ideal water velocity by applying the time differential to the raw travel times to obtain the correct travel times in line 40 and discloses the velocity in lines 45-55 of column 4

Chambers further discloses the limitation of zero-offset water bottom data in line 23 of column 4.

Chambers further discloses the limitation of determining an observed velocity at station A and station B by multiplying the reciprocal of the water velocity in line 35, to determine the corrected travel times and determines the correct water velocity in line 43 of column 4. Chambers further discloses the limitation of applying the vertical time correction to seismic data figure 9, and in the geometrical construction in line 29 of column 5 and calculates the first move out in terms of the RMS velocity in lines 35-55 of column 7.

Chambers further discloses the limitation of applying the water velocity correction to the seismic data by applying the travel time differentials between the two models to the arrival times of the seismic event data associated with the sub-bottom water layers in lines 5-12 of column 3 and in combination with the velocity data in lines 40-60 of column 4.

As to claim 17, Chambers further discloses the limitation of water velocity dynamic correction using the equation in figure 3 and discloses the geometrical construction "by using the equations commonly found in the standard text on geophysics", in lines 15-30 of column 5.

As to claim 18, Chambers further discloses the limitation of deriving the water velocity dynamic correction using the equation in figure 3 and using the models in lines 1-20 of column 3.

As to claim 19, Chambers further discloses the limitation of source S and receiver R1-R4 with offset 25-27 in figure 3, and discloses the first and the second

computer models using the equation in figure 3 in terms of the offset between the source and receivers in lines 12-20 of column 3.

As to claim 20, Chambers further discloses the limitation of normal move out velocities based upon the water velocities in line 66 and uses the hyperbolic move out correction line 64 in column 6 and in figure 9.

As to claim 21, Chambers further discloses the limitation of deriving the ray paths in the model using the equations in figure 3 and discloses the ray paths 25-27 between the surface 10 and the bottom 13 with the thermocline 26 in figure 3. Chambers further discloses the limitation of deriving the water velocity dynamic correction using the equation in figure 3 and using the models in lines 1-20 of column 3.

As to claim 22, Chambers further discloses the limitation of deriving the water velocity dynamic correction using the equation in figure 3 and using the models in lines 1-20 of column 3.

As to claim 23, Chambers further discloses the limitation of determining the velocity from the seismic data gather in line 62 in combination with the receiver points in lines 60-67 of column 2.

With regard to claim 24, Chambers discloses the limitation of determining an observed velocity at station A and station B by multiplying the reciprocal of the water velocity in line 35, to determine the corrected travel times and determines the correct water velocity in line 43 of column 4. Chambers further discloses the limitation of applying the vertical time correction to seismic data figure 9, and in the geometrical

construction in line 29 of column 5 and calculates the first move out in terms of the RMS velocity in lines 35-55 of column 7.

Chambers further discloses the limitation of using the first model with normal move out velocities in line 1 and determines the angle using the derived velocities in line 3 of column 3. Chambers further discloses the limitation of one or more receiver points in line 66 of column 2, and discloses receiver R0 with zero offset in line 20 of column 5, and further discloses the angled ray paths to receivers R1 and R4 in figure 3, and further discloses the angle slanted dashed lines 25 and 25' in figure 3 and in line 22 of column 5.

Chambers further discloses the limitation of time dependent correction in the vertical travel time in line 19 and the offset correction in the offset data in line 24 of column 4 in combination with the RMS velocity in lines 10-30 of column 5 and determines the angle using the derived velocities in line 3 of column 3.

As to claim 25, Chambers further discloses the limitation of deriving the water velocity dynamic correction using the equation in figure 3 and using the models in lines 1-20 of column 3.

As to claim 26, Chambers further discloses the limitation of determining velocity 25 and 27 from a seismic gather 18 in figure 3 in combination with the seismic events in line 61 of column 2.

As to claim 27, Chambers further discloses the limitation of the time dependent and offset dependent correction to correct travel times in lines 33-41 of column 4 using the equations in combination with lines 10-31 in column 5.

As to claim 28, Chambers further discloses the limitation of the selected velocity V^ in figure 3 in combination with the X^ - T^ analysis in line 15 of column 5.

Prior Art

5. The prior art of record and not relied upon is considered pertinent to the applicant:

Schneider Jr., US 5,532,976 is cited for the low seismic velocity of the water and the low seismic velocity of the mud water and velocity equation processing to correct the hyperbolic distortion.

Kalkomey, US 4,577,297 is cited for the method of velocity processing to correct the seismic reflection signals having undulating water bottom velocity distortions for velocity matching between the two layers.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor J Taylor whose telephone number is 703-305-4470. The examiner can normally be reached on Days 9AM to 5:30 PM.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 703-305-4816. The fax phone numbers for the organization where this application or proceeding is assigned are 703-

308-7722 for regular communications and 703-308-5841 for After Final communications.

8. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist. Telephone number 703-306-3431.

Victor J Taylor
Examiner
Art Unit 2862
February 24, 2003

EDWARD LEFKOWITZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800